ON PERSPECTIVE IMAGES OF ARCHITECTURE IN THE PAST AND TODAY – PART II

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Abstract. This paper takes up the questions of illustrating architecture in the perspective way, either in the intuitive way originating from observations of nature as well as in the graphical, geometrical way and in the form of computer simulation. Examples of paintings taking up this subject from various periods have been given, with particular emphasis put on Renaissance as the period of heyday in the art of perspective. The status of the perspective in the modern days has been presented as well (its creators and receivers).

Keywords: perspective, architecture in painting

Images of architecture of decorative features were created as early as in the ancient times. Buildings were drawn using the frontal perspective and in a large scale to decorate the interiors of houses or scenes of theaters (frescos in Pompeii, theatre in Greece). Representations of architecture were of minor importance in early oil paintings. Buildings occupied the background and figurative scenes (biblical, mythological ones) were brought to the forefront. During the period of Renaissance landscapes and views of buildings gained on the popularity, becoming significant theme of paintings. Cities, castles, temples or other characteristic city buildings were presented. The view was captured centrally or as the bird's-eye view taking into account the phenomena of perspective. It became possible due to discoveries in the fields of optics and geometry and elaboration of perspective constructions for the painters (L. B. Alberti[10], A. Dürer[11]). Realistic representations, almost documentary in their character, mixed together with fantastic visions of non-existing objects. Huge variations in the way of representation and the scale of the 'painted' architecture were visible. Miniature, schematic, general and representing only the outline of buildings drawings as well as large format scenes characterizing entire urban complexes and lay of the land were created. The most representative portraits of architecture were created in the seventeenth and eighteenth century as the so called vedutas, which represented in highly realistic way panoramas of cities, and presented particular objects with a wealth of details and against an interesting landscape. The architecture, dominating in these paintings, influenced compositional division as well as created scenes of historical events or scenes of everyday life of citizens and was presented using perfect perspective and lightning.

Formulation of rules of linear perspective in the fifteenth century facilitated painters creation of correct representations of the depth and relative spatial ratios. Rules of the linear perspective were known and used by painters through several centuries in less or more precise

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[10] L. B. Albetri *de Pittura* 1435, wyd. polskie *O malarstwie,* Wrocław 1963.
[11] A. Dürer *Vier bücher von menschlicher Proportion* 1528.

manner. Sciences contributed to the development of perspective. Perspective became a subject of dispute among scientists in particular among mathematicians[12]. Development of perspective and its theoretical expansion, as part of mathematics, rendered it inaccessible to the artists. 'The artists are not attracted by the routes of science, where one has to precisely follow the route of successive circumstances and conclusions, without which it would be impossible to avoid mistakes and reach the correct result. The artists tend towards approach based on the intuition, which allows complete penetration of a task by the sheer use of imagination. As far as possible they want to use simple and obvious methods, and avoid those overcomplicated. If an artist is required to use the perspective, most possibly he will avoid, what has aggregated through centuries creating the thick of descriptive geometry, and will want to reach to those stimulating imagination sources. In some way he or she will rediscover for him/herself the perspective constructions of Renaissance, once so fruitful and avant-garde'[13].

At present the function of architectural 'portrait' is filled by the photography. (Fig.1). The photography has confirmed the system of central projecting and has popularized this way of objects visualization. Irrespective of that, perspective in a painting depiction is always a spontaneous, sensual and individualized expression. Artist undertakes selection of the objects of presented reality, decides which of them are of importance and directs towards them the spectator's attention. Ignoring the insignificant parts he or she purposefully leaves aside precise recoding of the reality. A photograph is an objective perspective record of all parts of surroundings.

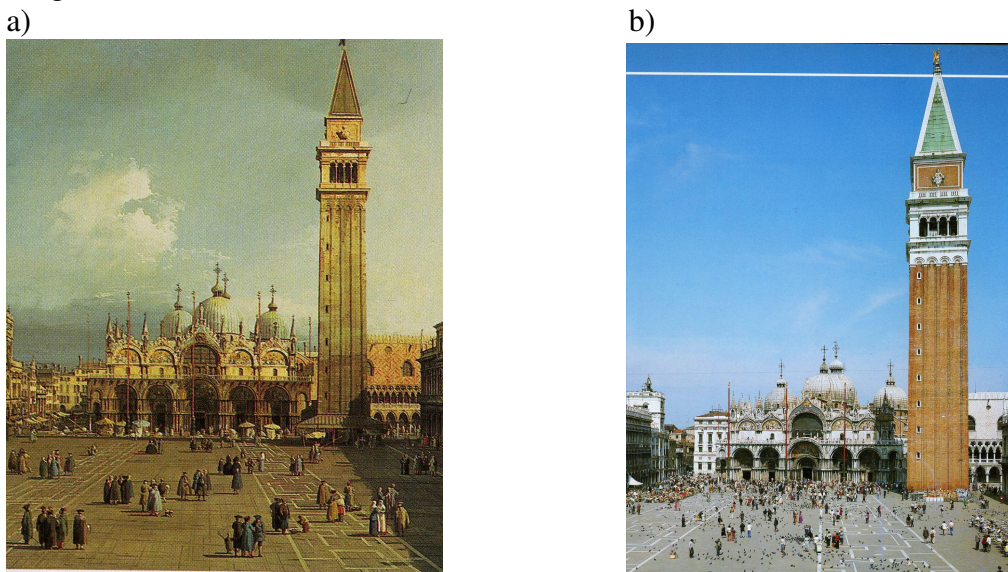a)   b)

Fig. 1. St Mark's Square, Venice: Canaletto - 1735 (a), nowadays photo (b)

At the end of the nineteenth century the convention of realistic representations starts to disappear and together with it disappears the usefulness of perspective. Painters are using different perspectives. Forms undergo breaking, flattening and geometrization. Objects symmetrical in reality, of regular shapes are presented as asymmetric ones, of deformed shapes. Paul Cezanne the author of numerous still life paintings composed objects of symmetrical, regular shapes and depicted them crookedly, asymmetrically. Lines and edges straight in the nature in his paintings become bent, discontinuous (Fig.2). This way of imaging – surprising and ini-

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[12] M. Sciarillo, S. Aker *Drawing as Insight into Wholeness* Journal of Geometry and Graphics, Vol.12 (2008), No.1, p. 87-98

[13] J. Bruzda *Sztuka perspektywy* Teka Komisji Urbanistyki i Architektury, Vol. XXVI (1993-1994), p. 145

tially welcomed critically, turned out to be a real one and one concise with the natural, living observation which is affected by the physiologically justified phenomena of illusions and afterimage. W. Strzemiński writes 'In the three-dimensional convergent perspective existed a conventional assumption (contradictory with the real process of our sight) that we are watching the world with one static view directed at one point. Position of all lines existing in the nature was determined with respect to that one vanishing point and point of sight. However, with the change of the direction in which we are looking, the vanishing point is moving as well. For each look new shapes of the dimensions, sizes and lines are brought. Each look brings a new situation of shapes'[14]. Thus watching, is not a once happening event but a process lasting in time. We do not see everything at the same time. Our sight keeps moving from point to point, focuses on strong accents and only after some time manages to embrace the entirety. The phenomenon of afterimage means that man retains in his memory the shapes of previously watched object, the images are overlapping for a moment, until our sight adapts to the new direction. The speed at which our sight keeps moving is most often much higher that the time our eye needs to adapt.

Prof. K. Bartel, researcher on the history of perspective, has drawn our attention to some images from distant epochs which characterize perspective dissimilarity and disturbed convergence. He suggests that these are not incidental inaccuracies but purposeful acts. In the *Wedding at Cana* painting of the fifteenth century by Hieronymus Bosch (Fig.3) he has indicated three different vanishing points instead of one geometrically correct and stated that despite this, a spectator 'does not sense a perspective error, and furthermore, geometrical correctness would unpleasantly surprise the spectator'[15].

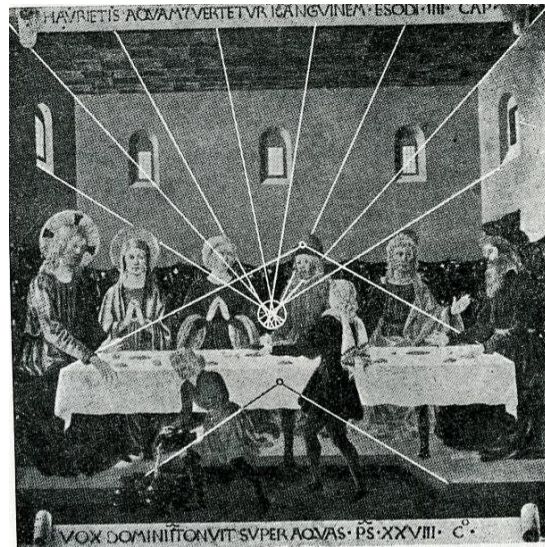Fig.2. Paul Cezanne *The Kitchen Table* 1890

Fig.3. Hieronymus Bosch *Wedding at Cana* Kazimierz Bartel *Perspektywa malarska* vol.2 p.316

In the twentieth century painters experimented with new ways of depiction of space, with different perspectives. Cubists (P. Picasso, B. Brague) constructed a different space showing the object simultaneously from several points of view. They rejected the rules of traditional perspective. Expressionists (van Gogh, Gauguin) deformed shapes and colors giving up the objectiveness and showing subjective visions. Surrealists (S. Dali, R. Magritte) painted illusorily represented objects and composed them into impossible combinations causing an impression of unreality. The objectivism, copying of the nature was given up. Unconventional approach to perspective (assuming of several points of view) and use of it for creation of un-

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[14] W. Strzemiński *Teoria widzenia,* Wydawnictwo Literackie, Krakow 1969, p. 212-216
[15] K. Bartel *Perspektywa malarska* t.2 PWN, Warszawa 1958. str.316.

realistic representations of the reality can be seen in works of M. C. Escher (Fig.4), G. de Chirico, Magritte, C. Carr, Ernst A. Green (Fig.5) and others[16].
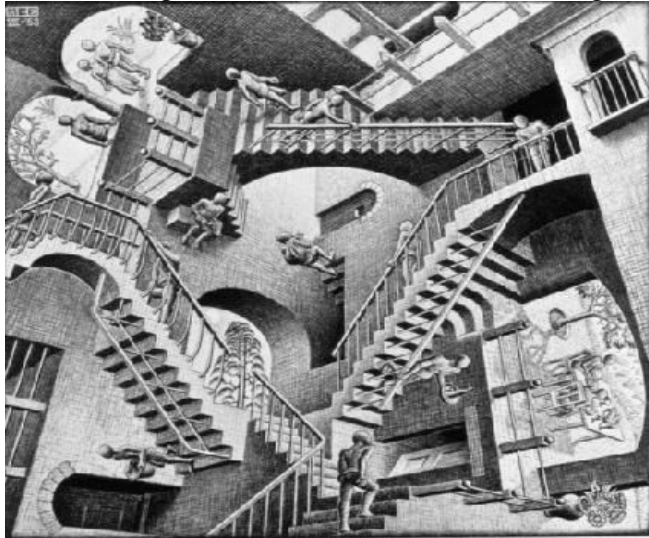

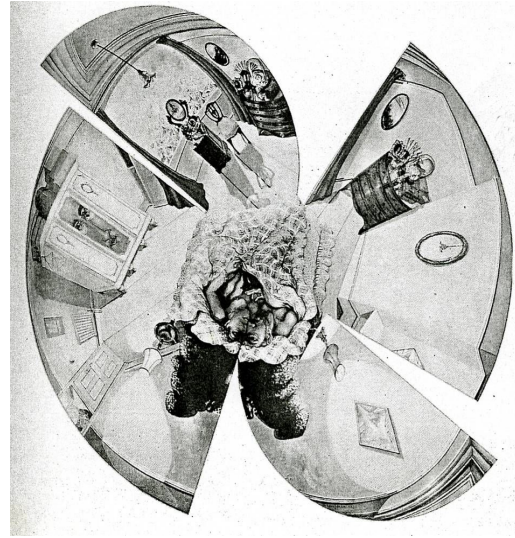Fig. 4. M. C. Escher *Relativity*   Fig.5. A. Green *Paradise*

Today we know that linear perspective is only one of possible arrangements of space in a painting; that contains conventional elements. Realistic painting representations of architecture with classic perspective are seldom encountered nowadays. Laborious, manual work has been replaced by digital techniques. Theory of geometry limited to its basics has remained within the scope of architecture, engineering and artistic studies. In the field of hand drawing following strictly the rules of construction, perspective is unnecessary. The point of view of J. Bruzda is worth mentioning 'The rules of projection, comprehensively describing the subject with the use of the terms of geometry, as discipline of the science, in the field of hand drawing comprise merely a general indication. The perspective does not have to be strictly followed. Many circumstances requiring omitting some of these rules do exist in hand made perspective drawing. It is done taking into account other properties of the space to plane relationship, provided that these will turn out more important for the drawing which is intended to move someone's imagination, to create an information or a spatial suggestion'[17].

The basic assumptions of perspective are used nowadays as a theme of perspective sketches from the nature or imagination. Sketches have a cognitive aim, they contribute to development of spatial imagination, perceptiveness, visual memory. Sketches from imagination comprise initial record of an idea, a memo of a design vision. Sketching remains an important and needed exercise of drawing skill, record of a design or information, measure of communication with the use of an image.

It seems that perspective is used to more extent by architects, engineers than by artist painters. 'After the methods of perspective construction had been elaborated, the architect's workshop became close to the workshop of painters. Objects of architecture were being shown in paintings and the perspective became some sort of an art.'[18]

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[16] M. J. Parramón, M. Calbó *Perspektywa w rysunku i w malarstwie*, Wydawnictwa Szkolne i Pedagogiczne, Warszawa 1993, p.33

[17] J. Bruzda *Niektóre zagadnienia zależności między formami w przestrzeni a ich obrazami na płaszczyźnie. Przyczynek do zasady rysunku odręcznego w architekturze.* Teka Komisji Urbanistyki i Architektury, T. XXII, p. 267

[18] A. Białkiewicz *Rola rysunku w warsztacie architekta.* Wyd. Politechniki Krakowskiej, Monograph 315, Krakow 2004

Nowadays perspective representations of architecture are most often created using digital technique. This method of presentation of a project is superior with respect to other techniques of imaging. Computer assisted visualization and photography have taken over the functions of documenting, recording and advertising of objects. Virtual observation, modeling and presentation are taking place here. Computer images of architecture can be repeatedly transformed, through changes in the camera positioning, lightning, colors, choice of magnifications etc. One can thus experiment and obtain within a short period of time a numerous different depictions, impressive perspectives of an object. Authors strive after surprising the spectator with amazing views, sharp perspective convergence, strong contrast of color and light. Computer visions imitate photographs of real objects 'in computer visualization disappears the border between the exterior and the interior, between a drawing and reality.'[19]

Nevertheless, many of those computer created objects will most possibly remain a vision, a virtual, idealized and beautified world (due to commercial reasons) often differing from the final, real look.

Mechanical, linear perspective is always created in an objective way, ideally precisely in accordance with the rules of the geometry; due to this schematic approach it has no such expression as the one created by a graphic.

Are the drawn and painted images of architecture going to survive in the age of digital techniques? Looking at the workshop of contemporary famous architects who employ modern hardware and software one can learn that they still draw, paint, make hand sketches and value this methodology of work and publish their first, general sketches of their concepts (Fig. 6).
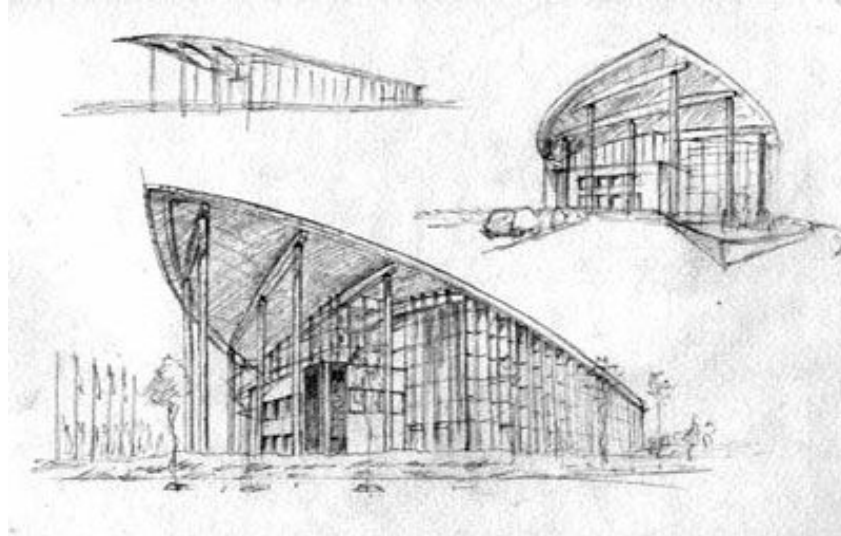

Fig .6. Perspective sketches: Mario Botta

What can be taken from the tradition of painting representations of architecture? What values remained up-to-date for nowadays creator of computer graphic images?

Painting depictions of architecture comprise an interesting material for observation of the workshop of former masters. In the masterpieces of art of painting we see coexistence of architecture and nature, its placement on the surroundings, lay of the land, taking into consideration virtues of the landscape, green and waters. Authors looked for interesting and harmonic views, favorable compositions, choice of lightning enriching the plasticity (of proper time of the day). Often, they synthesized the theme i.e. removed the surplus of details,

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[19] B. Banek *Wizualizacja perspektywiczna projektowanych obiektów a wizualizacja drogą programu komputerowego* Bulletin of PTGiGI, Zeszyt 5, Gliwice 1998, p. 10

giving up the pedantry and thus emphasized the main theme and directed the spectator's attention towards the most important parts.

Conclusions

Reaching to the sources of the art of perspective allows one to see subsequent achievements of the creators in the field of interpretation of the third dimension. Many artists were fascinated with the perspective since the times of Renaissance, in particular landscape painters and panoramas painters. Getting to know the history of development is an opportunity to get to know the art of painting, to discover the relationships between the art of painting and the architecture and to learn about the former techniques. Linear perspective which is still in use, is a wonderful discovery of the human mind. It allows presentation and explanation of the reality but holds some restrictions as well. It does not communicate the wealth of spatial impressions received in the nature. During the time of active observation, following the eyes in many directions (even without moving the head) overlapping, change of the field of view, of the focus and of the placement of vanishing points takes place. Thus, the search for a medium communicating the spatial phenomena in the way we perceive them still comprises a challenge.

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O OBRAZACH PERSPEKTYWICZNYCH ARCHITEKTURY DAWNIEJ I DZIŚ

Praca niniejsza podejmuje zagadnienia obrazowania architektury w sposób perspektywiczny zarówno intuicyjny z obserwacji natury jak i wykreślny, geometryczny oraz w formie symulacji komputerowej. Przedstawiono przykłady dzieł malarskich z różnych epok podejmujących tę tematykę, ze szczególnym uwzględnieniem renesansu jako okresu szczytowych osiągnięć sztuki perspektywy. Zaprezentowano również pozycję perspektywy w czasach współczesnych (jej kreatorów oraz odbiorców).